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such daily records to the Commissioner of Internal Revenue at Washington. If in such returns the employment of unwholesome material was reported, an investigation would be made by the proper revenue officer, and an explanation demanded from the brewer. Thus some sort of check is exercised over the use of poisonous materials. The production of distilled and fermented liquors in the United States since 1863, when a revenue was imposed on the same, is shown, at intervals of five years, in table.

*Table III.—Showing Production of Distilled and Fermented Liquors, at Intervals of Five Years, in the United States.*

Year ending June 30.	Liquors <sup>1</sup> (Gallons).	
	Distilled.	Fermented.
1863.....	16,149,954	62,205,375
1868.....	7,224,809	190,546,553
1873.....	65,911,141	298,633,013
1878.....	50,704,189	317,485,601
1883.....	76,762,063	550,494,652
1888.....	71,565,486	765,036,789
1890.....	83,535,165	854,420,264

While the production of distilled liquors has only increased five times, that of fermented liquors is fourteen times, what they were in 1863.

One fluid ounce or half a wine-glass of whiskey, rum, or gin, containing fifty per cent by volume of absolute alcohol, is equivalent in alcoholic strength to five ounces of light red wines, as claret; eight ounces of well-fermented cider; to nine ounces of ale or porter; to ten ounces of lager beer (over half a pint); and to twenty-three ounces of American weiss beer. The intoxicating effects, however, would be more rapid and pronounced in the case of the ardent spirits than they would be with the equivalent amounts of beers, owing to the more concentrated form and consequently quicker absorption in the circulation of the alcohol in the former as compared with its dilution in the latter beverage.

EDGAR RICHARDS.

[To be continued.]

#### THE STANDARD OF LIVING IN THE UNITED STATES. <sup>2</sup>

IN discussing the standard of living in the United States, I shall consider the producing classes as the people. They constitute the great majority, embody the vital forces of the nation, and represent its life and distinctive character.

An analysis of the conditions which mould the life of the people representing the civilization of the world leaves no room for doubt that the American standard of living is the highest known. The barrier of primogeniture, the repression of caste, the compulsion of social distinctions, are obstructions in the path of ambition which have no existence here. In this country there are no barriers to wealth or station which capacity and persistence cannot sweep away. Physical influences are here in harmony with the

<sup>1</sup> Under the name of distilled liquors are included whiskey, rum, gin, high-wines, and alcohol; and under the name of fermented liquors are included beer, lager beer, ale, porter, and similar fermented liquors (Ann. Rpt. Com. Int. Rev. 1889).

<sup>2</sup> Abstract of an address before the Section of Economic Science and Statistics of the American Association for the Advancement of Science, at Indianapolis, Ind., on Aug. 20, 1890, by J. Richards Dodge, vice-president of the section.

intellectual. The western world, in its most temperate zone, with long reaches towards the tropics and approaches towards the north pole, with a breadth bordered by the two great oceans of the world, and spanning practically the possibilities of climate by altitude, is in extraordinary measure independent of other lands. Its resources invite development; and social and political freedom stimulate noblest daring and highest enterprise in their utilization. Here the laborer stands on a relatively elevated plane. If native born, he has no conception of the limitations by which the life of his brother in other civilized countries is restricted. He requires more and better house room, food in larger quantity and greater variety, clothing for his family, books and facilities of education for his children, and something for social life, amusement, and even charities. He is apt to be interested in politics, in social or beneficiary or religious organizations, and oftentimes in all of these. I would not aver that his foreign brother does not possess similar tastes and preferences, but hold that his exercise and enjoyment of them are in more restricted measures, under the limitations of purse and social usages.

Want is not unknown here; the poor and afflicted are everywhere. A comparison with the most favored foreign country will suffice. The Tenth Census returned 66,203 paupers, or 1.32 to every thousand of the population. The record of 1850 was 50,353, or 2.17 to every thousand. This shows a gratifying decrease in pauperism in a period remarkable for increase of national wealth. In England and Wales the number of paupers in 1873 receiving relief in the several unions and parishes under boards of guardians was 887,345, and in 1888 the number was 825,509. The returns do not quite cover the entire population, which was 28,628,804 in 1888, but assuming that they cover all of England and Wales, the number would be 28.8 for every thousand people. This is in violent contrast to the situation in this country.

In the use of food our people are excessive and even wasteful. According to accepted statistics, Great Britain consumes an average meat ration not over two-thirds as large as the American; France scarcely half as large; Germany, Austria, and Italy still less. But the laborer's dietary is improving in those countries. It has already greatly improved in England. The average consumption of meat in the United States is probably not less than 175 pounds per annum. Of other civilized nations, only Great Britain exceeds 100, and many of them scarcely average 50 pounds. The consumption of the cereals, by man and beast, is three times as much, in proportion to population, as in Europe. For the past ten years the average has been 45 bushels for each unit of population, while the usual European consumption does not vary greatly from sixteen bushels per annum. While all is not used as food for man, no small part of it contributes to the meat supply.

The average consumption of wheat for bread is nearly five bushels, and about three bushels of maize and one bushel of oats and rye, or approximately nine bushels for each inhabitant. The average European consumption of wheat is about 3.5 bushels. In the consumption of fruits, the difference between this and other countries is marked with unusual emphasis. Small fruits, orchard fruits of all kinds, and tropical fruits, as well as melons of many varieties, are in profuse and universal daily use in cities and towns, and in the country the kinds locally cultivated are still cheaper and more abundant in their respective localities, though scarce in the regions of recent settlement and those unsuited to a wide range of species. The consumption of vegetables is not excessive.

The American people are no less profuse in clothing than in food. This country is a favored land in fibre production. More than four hundred millions of dollars is the comfortable sum which represents the present fibre product; in the form of cotton, wool, hemp, and flax. There is also experimental production of silk, ramie, sisal, jute, and many others suited to the climate, some of which will ultimately become the foundation of industries. More than half of the material for the cotton factories of the world is grown here, and a third of that is manufactured and mostly consumed at home. If 65,000,000 people require one-sixth of the cotton manufactured in Europe and America for the use of nearly 450,000,000 inhabitants of these continents, and of the millions in India, China, Japan, and other countries obtaining

supplies from the factories of Christendom, the disparity in consumption between this and other countries must be great indeed. With an average *per capita* consumption of 17.5 pounds of cotton, 8.5 of wool, and a large quantity of silk, linen, and other fibres, the claim of superiority in supply of clothing cannot well be disputed. Thus one-twentieth of the population of the world consumes nearly a fourth of the wool product of the world. If the people of Europe should demand an equally liberal supply, the earth might be scoured in vain for the requirements of such a consumption. As they do not, it may be supposed that a larger proportion of cotton would be needed; but a consumption equal to that of this country would not leave a pound for North or South America, Asia, Australasia, or Oceanica. Indeed it would not suffice for more than a supply of 15 pounds per head to Europe alone.

The satisfaction of the dietetic and sartorial demands of our people is no more imperative than the urgency of their requirements for home-making and ornamentation. No able bodied craftsman or skilled laborer, at forty years of age, needs to pay rent for his habitation from inevitable necessity. If he does, it is because of extravagance, mismanagement, dissipation, or peculiar misfortune. There are crowded and unhealthful quarters in New York and other cities, but they are mainly occupied by lower classes of foreigners. Philadelphia, a city of the largest class, with a million of people by no means exclusively native born, has a dwelling-house for every six inhabitants. Washington is equally well provided with homes largely owned by their occupants. There are log-cabins in the South, board dwellings on the prairies, and even "dug-outs" on the plains of the more distant West; but they are temporary expedients of those too busy in opening farms and growing crops to build permanent houses, and too poor to use their scanty capital in expenditures not immediately and largely productive. A glance at the census records of manufacture of furniture and furnishing, of hardware, of heating and illuminating apparatus, of ingenious devices for saving labor and expediting domestic processes, reveals a wealth of suggestion in the lines of comfort and of luxury in building and ornamentation of homes. The fact is gratifying, as it is indisputable, that a large part of this material goes into the houses of the working classes; if not so much of the costly and elegant, at least a large proportion of the tasteful, ingenious, and comfortable appliances of home equipment and adornment. The evidences of prosperity of the producing classes are not seen alone in well furnished homes, but in many forms of profitable investment in real estate, stocks and bonds, and in money savings banks.

The American citizen is not content to exist as a mere animal. Physical well-being does not limit his desire or aspiration. He is especially solicitous for the welfare and advancement of his children, and freely depletes a limited income in their education and training for a career in life, often upon other than ancestral lines. This tendency may become excessive, and is already to some extent, it must be admitted, creating a distaste for useful industry, and a desire for conspicuous position, for accumulation without labor, and speculative rather than productive occupation. Thus the average American lives upon a high plane, exciting the envy or the emulation of people of other countries, and inducing extraordinary immigration.

A high standard of living requires higher wages. While the wages of European artisans and mechanics, and of farm laborers, have advanced in recent times, they nowhere approach very closely the rate of wages received by the same classes in this country. In an extended discussion of the rate of wages in the leading occupations, before the London Statistical Society in 1880, by Mr. J. S. Jeans, it was claimed as a deduction from available statistics that the wages in the United States were 205 per cent higher than in France, 162 per cent higher than in Germany, and 84 per cent higher than in Great Britain. His estimate of the agricultural wages of Great Britain was 12 shillings per week, or about \$150 per annum. The average wages of white farm laborers in the United States, as returned to the Department of Agriculture in May of the present year, is \$276 per annum, which is 80 per cent above the rate quoted for Great Britain. According to accepted estimates of the rate of wages of men in the principal

trades of France, the wages of women in this country are from 60 to 80 per cent higher. A report of the Department of Labor makes the income of women from regular occupations, as averaged from 5,716 returns in 22 principal cities, \$295.54 per annum, with \$40 average additional income in 682 of the returns.

Land is the freest thing in America. With nine million farmers and farm laborers, cultivating over five million farms, but a third of the land is taken up, but a small part of that is under crops, and the area under nominal cultivation is superficially treated and scarcely up to half its maximum production. Within a few months past there has been an expression of dissatisfaction with the profits of farming, made mostly by political farmers, and relating mainly to the prices of cereals. Cotton brings fully the average price of the last decade, and the last crop was the largest ever grown; still the ferment of dissatisfaction has leavened the whole South. State and national statistics of the last ten years show that agricultural indebtedness has decreased in that region, that the home market is increasing, and that prosperity is more general than ever before; still farmers appear to be unhappy. It is mainly a case of aroused ambition, and a determination to be felt in business, and especially in politics—and it is in these respects a hopeful indication.

There has been much said about farm mortgages,—quite too much. The most reckless exaggerations have been made, and unfortunately have been repeated in legislative halls, and in newspaper interviews and editorials. If the census can obtain the facts, it will show that they have been magnified enormously to mislead the public. All statistical analysis of available data testifies to the truth of this averment. Much the largest proportion of the farm mortgages of the country are for lands and improvements, increase of investment, settlement of estates, and release to sons by wealthy retiring farmers, and are evidences of enterprise and self-reliance and thrift.

Shall the standard of living be maintained? This is a grave question. Upon its maintenance depend the future education, enterprise, independence, and prosperity of the people. It is pertinent also to frame the inquiry, Will it be maintained? for there are influences, from without and perhaps from within, that possibly tend to inevitable lowering of the present standard. Our population has doubled in less than thirty years. There is every reason to believe that it will exceed the present population of Europe before the end of the next century. With five times the present number of people to feed and clothe, can they be fed and clothed as well? It may be, if they continue industrious, if the proportion of non-producers does not increase, if labor shall be distributed harmoniously in production, and if the laborer can secure a just recompense. If the present disregard of the requirements of national economy in production shall continue, if we remain idle at home and go abroad to supplement the deficiencies created by our own inertia, a lower level will be inevitable. Something cannot come from nothing. No nation can consume more than it produces. It is useless to ask what natural productions we can profitably grow. What can we not grow? is a more appropriate question.

As the scale of expenditure must be limited by income, by wages, the rate of wages must be maintained or the standard of living will inevitably be lowered. Without reduction of wages and decrease of cost of manufacture, is enlarged exportation of surplus products possible? If not, it will be better to live well at home, without a surplus, than to live meanly in order to help foreigners to better living.

By comparing our increase of population, to be fed here, with the increase of foreign dependents on our surplus, we find at least twenty new domestic mouths to fill for every one in foreign lands. In the last decade there has been decrease; in the previous one there was considerable increase. Only crop disaster, threatened famine abroad, can enlarge the foreign demand. While our population is enlarging at the rate of nearly two millions per annum, our increase of production will be needed mainly at home, and it is an even question whether the foreign requirements will increase or decrease. It is therefore clearly apparent that the demand for augmented production will come mainly from growth of the population of the United States. This makes the exportation of the

surplus of agriculture a matter of small comparative importance, and of manufacture a minor consideration.

But the record of the growth of exports of domestic manufactures does not warrant the assumption that higher wages are an inevitable bar to exportation. Such exportation in the last twenty years has much more than doubled, while the increase of population was only seventy per cent. There is a constant tendency to greater effectiveness of labor by the acquisition of skill, and especially by inventions and ingenious appliances for the saving of labor.

In certain manufactures, in which the cost of labor has been double that paid by foreign competitors, exports have increased beyond the advance in population, in some cases ten, twenty, even thirty fold. This ability to export, notwithstanding the higher rate of wages, is not as yet general, but there is a possibility, yea, a certainty, of gradual enlargement of the list and especially the volume of exportable goods, partly through superior skill, and efficiency of labor, and perhaps in larger part from labor-saving machines and processes, and from the distinctive peculiarities and marked availability for their intended uses in the manufactured goods. The ability to export, therefore, is less a matter of muscle of the mechanic than of inventive power and of cultivated intellect in the forms and adaptations of the thing manufactured. The higher wages may thus be neutralized by the aid of mind far more than of muscle.

An analysis of the facts that illustrate the standard of living in the United States leads to the inevitable belief that the people, the worker in all the hives of industry, the constructive forces of the nation, exist upon a higher plane than those of any other country. The following results of this investigation are presented:—

1. The American citizen is free from the bondage of feudalism, from the domination of kingly or aristocratic mastery, and from the control of caste. He is an independent individual, a sovereign in his own right, voluntarily submitting to laws of his own making, to limitations of natural rights for the general welfare. His aspirations are checked only by a wise judgment of his capacity, and his elevation in the walks of life is limited only by his ability and opportunity. He is the master of his own career and the maker of his own fortune.

2. Inducements to action lead to activity in effort; intense and persistent application causes waste of tissue, of nerve and muscle; and a liberal ration becomes necessary for repair of waste. The opulence of nature makes rich provision for the largest alimentary liberality. Therefore large consumption of all the elements of nutrition is assured, fully fifty per cent more than that of the average in Europe, and more than twice as much as that of the less favored peoples of the world.

3. The variety and abundance of vegetable and animal fibres, by the favor of soil and climate and the energy of man, are no less remarkable than the range of species and ease of cultivation of the grains and fruits. The development of taste and the effort to rise in social life conspire to create an extraordinary demand for clothing, so easy to gratify, and so increased by the facility of its gratification.

4. It is a natural corollary of these facts, as stated heretofore, that "the satisfaction of dietetic and sartorial demands of our people is no more imperative than the urgency of their requirements for home-making and ornamentation." Liberal demands in food and clothing are only consistent with a high appreciation of comfortable housing. Bed and board are indissolubly joined.

5. Such a scale of expenditure presupposes a higher rate of wages, a larger income than that of average peoples. The facts show that our wages are from fifty to one hundred per cent higher than those of the workmen, in their several classes, of the most favored nations, twice as high as the average of certain countries, and three times as high as that of certain others.

6. With seventy acres of land for every farm worker, three hundred and fifty bushels of cereals for each, with abundant industrial or surplus crops, meats, fruits, and vegetables in equal abundance, and markets greedy for the surplus, the farmer is in condition to live and thrive, or know the reason why his profits do not meet his expectations.

7. The question arises, Shall the present standard of living be

maintained? It is a point upon which hang "the future education, enterprise, independence, and prosperity of the people" of the United States. It depends on the industry of the producing classes,—their wisdom in the distribution of their labor towards a production that shall meet their wants. If idleness shall be encouraged, production limited, importation enlarged, and dependence on foreign countries fostered, wages will be reduced, and the ability to purchase, as well as the volume of production, will decline. If the advice of public and private teachers of repressive economy, to buy every thing abroad and sit down in the enjoyment of the luxury of laziness at home, shall become the law of the land, short rations will follow, and high prices will only be abated by the inability of our people to purchase for consumption.

8. If, on the other hand, we determine that there shall be no decline in production, agricultural or other, we must provide for it manfully by our labor, realizing that no nation can live beyond its income, or consume more than it produces.

9. Unless the largest variety of production shall be encouraged, and the highest skill shall be stimulated in the endeavor to meet all the wants of our people by the results of our own labor, it will be impossible to have a surplus for export. The example of Spain and India, in contrast with that of England and Belgium, or of France and Germany, enforces this conclusion. But in view of the fact that high wages must co-exist with a high standard of living, as the history of wages in all countries shows, can we export a surplus produced by high wages? Our experience of the last twenty years shows that our exports of domestic merchandise, produced by the highest wages of the world, have increased much faster than population, some a hundred, some a thousand fold—not because of the fact of high wages, but in spite of it; not so much by the force of muscle as by the creative power of mind. The creations of invention, in the lines of taste and utility, adaptation and expedition, can nullify the obstruction of high wages far more than advance in skill and manual dexterity. It is a matter of time, of determined effort, of high endeavor, to render high wages consistent with large exportation of surplus; but the future will accomplish it, if the present scale of living and rate of wages of the American people shall be maintained.

#### NOTES AND NEWS.

At a meeting of the Wellington Philosophical Society, New Zealand, Mr. Hulke exhibited a spider that carried its young on its body without web or filament until they were able to run.

—Sponge would seem to be an unpromising material for a sculptor to work upon; but that a work of art may be chiselled, or rather scissored, from it is proved by a life-size statue in sponge now in the sponge department of McKesson & Robbins, wholesale druggists, on Fulton Street, this city. The statue represents a Greek sponge-gatherer standing in the bow of a boat, pole in hand, gazing intently through a water-telescope at a piece of sponge which he is supposed to be endeavoring to secure. The figure is composed of numerous pieces of what is known as leathery potters' sponge, carefully matched as to color, texture, and shape, so that the statue appears to be cut from one large sponge. The artist has done his work well, the face especially being an excellent piece of carving.

—Professor T. Hirsch, reporting for the Committee of the Mechanic Arts of the "Société d'encouragement pour l'Industrie Nationale" of France, at the meeting of July 11, states that the committee has analyzed the work of M. Dwelshauvers Dery, and finds that "the method of calculation proposed by him is at once original, and fruitful of results. In its application to the experiments of Mr. Donkin, its author demonstrates the course to take in computation, and thus facilitates the work of all those who desire to study such questions. It constitutes an important advance in the study of such complex phenomena as those of which the steam-engine cylinder is the seat." The committee proposed very hearty thanks from the society to the author of this work; they were accorded, and the memoir of M. Dwelshauvers Dery was directed to be inserted in the bulletin *in extenso*.